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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/087,737	03/05/2002	Tsukasa Yamasaki	220179US3X	7006

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[REDACTED] EXAMINER

KERNs, KEVIN P

ART UNIT	PAPER NUMBER
	1725

DATE MAILED: 07/29/2003

9

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>
	10/087,737	YAMASAKI ET AL.
	<b>Examiner</b>	<b>Art Unit</b>
	Kevin P. Kerns	1725

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) Responsive to communication(s) filed on 07 July 2003.
- 2a) This action is FINAL.                  2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-5 is/are rejected.
- 7) Claim(s) 5 is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) The proposed drawing correction filed on 07 July 2003 is: a) approved b) disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some \* c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) The translation of the foreign language provisional application has been received.
- 15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                  | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### ***Claim Objections***

1. Claim 5 is objected to because of the following informalities: in the 4<sup>th</sup> line, "channel" should be changed to "channels". Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1-3 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakashima et al. (US 5,207,266).

Nakashima et al. disclose a water-cooled copper casting mold (build-up mold with a copper plate and a back frame fastened to the copper plate with bolts) having a plurality of symmetrically arranged slit grooves, or cooling channels (symmetric with respect to left and right sides of the centerline in the casting direction), such that the number and widths of the cooling channels are increased, while the channel depths are constant (in Figures 1 and 9), in the regions adjacent to the fastening bolts, to achieve a nearly constant temperature distribution throughout the cooling regions of the casting mold, while keeping the velocities of the cooling water substantially the same in the various cooling channels (abstract; column 1, lines 6-61; column 2, lines 18-25; column 3, lines 1-68; column 4, lines 1-63; and Figures 1, 9, and 13). In the embodiments of Figures 1 and 9, the channel widths adjacent the bolts are up to three times larger (preferably 1.5 times larger) than in the parallel channels between the bolts (column 2, lines 18-25; column 4, lines 55-68; column 5, lines 1-19; and Figures 1 and 9). With regard to the cooling channels being separate, distinct, and unconnected from other cooling channels, the use of separate cooling channels in lieu of interconnected channels presents no novel or unexpected results and solves no stated problem, and such variations would have been obvious to one of ordinary skill in the art. *In re Kuhle*,

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188 USPQ 7 (CCPA 1975). The increased number and widths of the cooling channels (while keeping the channel depths constant), in the regions adjacent to the fastening bolts, are advantageous for achieving a nearly constant temperature and flow velocity distribution throughout the cooling regions of the casting mold, as well as increasing the cooling effect in the bolt fastening region (Nakashima et al.; abstract; column 1, lines 39-61; and column 4, lines 26-31).

6. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nakashima et al. (US 5,207,266) in view of Sevastakis (US 4,640,337).

Nakashima et al. disclose and/or suggest the elements of claims 1 and 2 above. Nakashima et al. do not disclose the wave pattern/curvature of the cooling grooves.

However, Sevastakis discloses a cooled continuous casting apparatus, in which the apparatus includes cooling via semicircular indentations (wave pattern/curvature) that provide increased agitation of the coolant flow, and such increased turbulence is advantageous for providing better heat transfer from the increased cooling area, resulting in increased cast product quality and increased life of the cooler body (abstract; column 1, lines 34-68; column 2, lines 1-2 and 63-68; column 3, lines 1-21 and 53-63; column 4, lines 57-64; and Figures 1, 3, 5, and 10).

It would have been obvious to one of ordinary skill in the art at the time the applicants' invention was made to modify the water-cooled copper casting mold of Nakashima et al., by adding the semicircular indentations as cooling channels, as taught by Sevastakis, in order to provide better heat transfer from the increased cooling area,

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resulting in increased cast product quality and increased life of the cooler body (Sevastakis; abstract; column 1, lines 34-68; column 2, lines 1-2 and 63-68; column 3, lines 1-21).

***Response to Arguments***

7. The examiner acknowledges the applicants' amendment (paper #7) and corrected drawings (paper #8), both of which were received by the USPTO on July 7, 2003. The corrected drawings (overcoming prior drawing objection) are approved by the examiner. The prior objection to the abstract has been overcome by the applicants' amendment. Prior objections and 35 USC 112, 2<sup>nd</sup> paragraph rejections to the claims have also been overcome by the amendment, but a new objection to claim 5 is raised by the amendment (see paragraph 1 above). With the applicants' correction of the dependency of claims 4 and 5 in the amendment, claims 1-5 are presently under consideration in the application.

8. Applicant's arguments with respect to claims 1-3 have been considered but are moot in view of the new ground(s) of rejection (see paragraphs 5 and 6 above).

***Conclusion***

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

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§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin P. Kerns whose telephone number is (703) 305-3472. The examiner can normally be reached on Monday-Friday from 8:00am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dunn can be reached on (703) 308-3318. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-7718 for regular communications and (703) 305-6078 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

KPK  
kpk  
July 22, 2003

  
M. ALEXANDRA ELVE  
PRIMARY EXAMINER